NON-PUBLIC?: N
ACCESSION #: 8704280354
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Fort Calhoun Station, Unit No. 1 PAGE: 1 of 4

DOCKET NUMBER: 05000285

TITLE: Loss of Off-Site Power
EVENT DATE: 03/21/87 LER #: 87-008-00 REPORT DATE: 04/20/87

OPERATING MODE: 5 POWER LEVEL: 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Stephen Clayton, Shift Technical Advisor Fort Calhoun Station, Unit No. 1 TELEPHONE #: 402-426-4011

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: While in the refueling shutdown condition at 0754 (CST) on March 21, 1987, an unplanned loss of all AC power occurred due to personnel error. AC power was restored when operators manually started the emergency diesel generator to supply power to vital loads lost in the transient.

The loss of 161KV power occurred when electrical maintenance personnel were cleaning (under the preventive maintenance program) inside a transformer switch box. They accidentally tripped an oil pressure relay, which in turn tripped the breaker supplying 161 kV power. The open breaker caused the temporary loss of power to shutdown cooling, along with other non-vital electrical loads. Vital and non-vital loads were regained within five minutes when the emergency diesel generator was started and loaded. The 161KV line supplying off-site power was regained within 40 minutes when the pressure relay and lockout relay were reset and associated breakers were closed.

To prevent future power losses of this type, the following actions were taken: 1) Caution signs have been hung on transformers, 2) information has been sent to operations and electrical maintenance personnel noting precautions, and 3) the annunciator response operating procedure has been updated to eliminate procedural inadequacies which delayed corrective action.

(End of Abstract)

On March 21, 1987, at 0754 (CST) hours, all off-site power (except 13.8KV supplied to the Technical Support Center) was lost for approximately 40 minutes during refueling shutdown conditions. The loss of off-site power caused a temporary loss of all 4160V and 480V vital loads including shutdown cooling, along with non-vital loads including instrument air and plant lighting. Vital and non-vital loads were restored within five minutes when operators started an emergency diesel generator, restoring power to bus 1A3.

Analysis of the transient identified the root cause of the event to be personnel error. Contract personnel, under the supervision of electrical maintenance, were cleaning (housekeeping) inside transformer T1A3's switch box, when they inadvertently tripped an oil fault pressur relay. (Refer to sketch at end of text.) Unbeknownst to them, actuation of this relay tripped the 86/T1A3 lockout relay. This relay in turn tripped breaker 111, thereby losing off-site 161KV power to the plant. Alternate offsite 345 kV power, backfed through the station's output transformer, was not available at the time due to scheduled refueling maintenance work. Consequently, 4160V and 480V vital and non-vital loads were lost.

Control Room operators, immediately recognizing the transient, proceeded to establish alternate power from Diesel Generator No. 1 at 0757 hours by manually starting and loading the diesel. (Diesel Generator No. 2 was out of service for modification work.) The diesel was in the off-auto position at this time because preliminary modification work (scaffold construction) around DG-1 was being performed. Shutdown cooling was then reestablished at 0759 hours, approximately five minutes into the transient. Other non-vital loads, including plant lighting and instrument air were also reestablished within five minutes.

Control Room personnel, still unaware of the general housekeeping that was performed in the transformer switch box, received alarms indicating the oil pressure relay actuation and attempted to restore off-site power by resetting the tripped 86/T1A3 lockout relay at 0816 hours. The relay would not reset and control room personnel could not determine the cause of the oil pressure fault and were unable to determine how to reset the oil pressure relay. Later analysis of Operating Procedure OP-10 noted inadequacies in its description of how to reset lockout relay 86/T1A3 by resetting the oil pressure relay. Electrical maintenance was therefore summoned to the control room, providing further information concerning work being performed on transformer T1A3 at the time of the event. Electrical maintenance personnel were aware of the oil pressure reset switch located outdoors in the transformer switch box and were immediately sent out to reset the switch. Once the oil pressure relay was reset, operators were then able to restore off-site power when the

86/T1A3 lockout relay was reset and breaker 111 was closed at 0831 hours. Due to the nature of the work being performed on the switch box, i.e., general housekeeping under the preventive maintenance program, Operations was not aware of the work prior to the start of the job. General housekeeping of the type leading to the event is an ongoing process, not normally requiring control room notification prior to work beginning. As such, corrective action was delayed.

A review by Control Room Operations personnel noted that Technical Specification 2.2(1) (Boric Acid Flow Paths) was violated for approximately three minutes when power was lost to the boric acid pumps. The NRC was notified of the event per 10CFR50.72, "Four-Hour Report", due to the manual start of the diesel generator.

To prevent future personnel errors of this type, corrective actions included:

1. Signs have been posted on all transformer control boxes stating, "161KV POWER CAN BE TRIPPED BY SWITCHES INSIDE THIS BOX".

2. Operating Procedure OP-10 has been updated to include resetting the oil pressure relay prior to resetting the T1A3 lockout relay.

3. A "Hotline" (3-7-17) has been sent to operations and electrical maintenance personnel concerning the event and noted precautions.

4. Operating Procedure OP-10 was reviewed and corrected for instances where additional direction was needed for responding to oil pressure relay annunciators for the 345KV and 161KV transformers.

5. The preventive maintenance (PM) logs for the T1, T1A1, T1A2, T1A3 and T1A4 transformers have been revised to provide for Shift Supervisor notification prior to beginning of refueling outage housekeeping work. This will preclude future maintenance of this type being performed without adequate control room awareness.

Additionally, the generic aspects of personnel errors of this type will be addressed in the LER which OPPD will submit May 4, 1987, concerning a subsequent loss of power event.

SIMPLIFIED ELECTRICAL DISTRIBUTION

FIGURE OMITTED - NOT KEYABLE (DIAGRAM)

Omaha Public Power District
1623 Harney Omaha, Nebraska 68102-2247
402/536-4000

April 20, 1987
LIC-87-265

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Reference: Docket No. 50-285

Gentlemen:

Licensee Event Report for the
Fort Calhoun Station

Please find attached Licensee Event Report 87-008 dated April 20, 1987. This report is being submitted per requirements of 10 CFR 50.73.

Sincerely,

/s/ R. L. Andrews
R. L. Andrews
Division Manager
Nuclear Production

RLA/me

Attachment

cc: J. E. Gagliardo
Reactor Projects Branch
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Tx. 76011

W. A. Paulson, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector
INPO Records Center
American Nuclear Insurers

SARC Chairman
PRC Chairman, % R. G. Ellis
Fort Calhoun File (2)
S. J. Clayton
Fort Calhoun Station Training, % J. J. Fluehr

Employment with Equal Opportunity
Male/Female

*** END OF DOCUMENT ***